

**To:** Grandinetti, Cami[Grandinetti.Cami@epa.gov]  
**From:** Mahmud, Shahid  
**Sent:** Fri 8/14/2015 10:17:57 AM  
**Subject:** RE: I have a theory about Gold King

Cami,

Wow you were up late and thank you for your very insightful thoughts. I was kind of thinking along the same lines as well. Also, when Sunshine Mining Company plugged the American Tunnel (which may have been hydraulically connected), the water probably backed up some more behind the collapsed workings. Thanks!

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EPA Abandoned Mine Lands Team  
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From: Grandinetti, Cami  
Sent: Friday, August 14, 2015 3:08 AM  
To: Mahmud, Shahid; Grandinetti, Cami  
Subject: I have a theory about Gold King

Shahid--I think this is a fluids flow problem. I think there must have been another (maybe multiple) debris piles upstream in the mine workings. The water held within this upper blockage and the lower blockage were in some "stable" condition due to the fact that the water level on either side of the upper piles was the same. When the teams started removing the debris at the lowest end, this lowered the water level on the downstream side of the upper debris pile--thus changing the "stable" condition with the hydraulic head change. My guess is that it didn't take much of a head difference to trigger the upper mine water pool to break through the upper dam. I've attached a rough drawing to show what I'm thinking.

Let me know what you all find when you're out there. I'd look for evidence of water back in the workings. These kinds of blockages, while stable in the short term are obviously not engineered structures and wouldn't have lasted long.